Review Article

An Overview of the Role of Artificial Intelligence on the Performance of Small and Medium-Scale Enterprises in Nigeria

Fatima Abdulhamid; Abdul Rahman Abubakar*

School of Business Education, FCET Gombe, Nigeria

*Corresponding author: **Abdul Rahman Abubakar**, School of Business Education, FCET Gombe, Nigeria. Email: fatimahabdulhamid15@gmail.com

Abstract

In the past 15 to 20 years, there has been a surge in the use of Artificial Intelligence (AI). Small, Medium-scale Enterprises (SMEs) and large corporations can all benefit from the use of AI in their business development. The major goal of this essay is to examine how AI can be used to advance business operations in SMEs in Nigeria. To this effect, a methodical approach to literature review was used. The key conclusions are that artificial intelligence may be utilised to keep a safe distance from others, do business from a secure location, improve customer delivery, bring in business for organisations, and give a competitive edge to SMEs. It was noted that artificial was already being used by major companies like Google, Facebook, TikTok, Netflix, and Amazon, but now smaller businesses could also make use of this resource to increase their production and operational operations to compete and advance in the current environment. Future research can further test the characteristics at the primary level after the researchers recognised them as being responsible for the adoption of artificial intelligence by the Nigerian SMEs.

Keywords: Artificial intelligence; Small and medium scale enterprises; SME performance; New normal

Conceptual Background

The Concept of Small-Scale Business Enterprises

Modern economies rely heavily on SMEs (small and medium-sized businesses), and their contribution to economic growth is acknowledged. World Bank 's definition of SMEs is that micro scale; less than 50 employee, small scale; 50 employees, medium scale; 50-200 employees [1]. Due to these social and economic aspects, the SME sector has come to be seen as having strategic value for the economy [3]. Only if governments are committed to supporting private sector-led growth and entrepreneurship will the developing economies' growth agenda through 2030 be attainable. economic measures that strengthen economies' ability to compete to promote growth that is more wholesome, sustainable, and equitable. These kinds of regulations are critical for businesses of all sizes, but especially for the numerous SMEs that are contributing to the health of the world's economies. Their primary objective in participating in global value chains is to promote international trade and investment while also raising their level of productivity and innovation potential. SMEs make up 95% of all businesses worldwide and more than half of all jobs, yet according to Maas, Sadalia, Ilham and Sinurat, [9], 200 million enterprises lack the funding they require to expand, invest, and create new jobs. About 50% of SMEs and the private sector together account for about 90% of all jobs worldwide.

Due to its major contribution to achieving numerous socio-economic goals, including increased growth in employment, output, promotion of exports, and supporting entrepreneurship, the SME sector is well acknowledged for its significance. Recent empirical research demonstrates that in high-income nations, SME contribution to GDP and employment is over 55% and over 65%, respectively. SME's and unregistered businesses account for more than 60% of the GDP and more than 70% of all jobs in low-income countries, and more than 95% of all jobs and roughly 70% of the GDP in middle-income nations, respectively. For instance, among the nations of the European Union, there are almost 25 million small enterprises, or 99% of all businesses, which employ about 95 million people and account for 55% of all jobs in the private sector. Exports and productivity growth both play a significant role [2]. But as a result of the process of globalization, the true significance of SMEs has come to light. They are now required to adapt to the shifting dynamics of innovation and competitiveness. Small and Medium-sized Enterprises (SMEs) are crucial for boosting the competitiveness and inventive potential of nations and regions, according to various studies.

Citation: Abdulhamid F, Abubakar AR. An Overview of the Role of Artificial Intelligence on the Performance of Small and Medium-Scale Enterprises in Nigeria. Austin J Bus Adm Manage. 2024; 8(1): 1071.

The Concept of Artificial Indolence (AI)

The simulation of human intelligence by computer-coded heuristics is known as Artificial Intelligence (AI). These days, this code is widely used in a variety of applications, including cloud-based business applications, consumer apps, and even embedded firmware [15]. Because Generative Pre-Training Transformer applications were so widely used in 2022, AI became more widely accepted. OpenAI's ChatGPT is the most well-liked programme. George and George, [5] posited that the majority of consumers have come to associate ChatGPT with AI due to its enduring appeal. But it only reflects a small part of the ways that AI technology is now being employed. The ability of artificial intelligence to reason and execute actions that have the best likelihood of reaching a particular goal is its ideal quality [14]. Machine Learning (ML), which refers to the idea that computer programmes can automatically learn from and adapt to new data without being helped by humans, is a subset of artificial intelligence. Through the incorporation of enormous volumes of unstructured data, such as text, photos, or video, deep learning algorithms enable this autonomous learning [7].

Furthermore, AI suggest computer's or a robot's capacity to carry out actions that are typically performed by intelligent beings [4]. The phrase is widely used to refer to a project that involves creating computer programmes that have the mental faculties that distinguish humans from other animals, including the capacity to reason, find meaning, make generalisations, and learn from past mistakes [12]. Since the advent of the digital computer in the 1940s, it has been proven that computers are capable of being expertly programmed to perform exceedingly challenging jobs, such as finding proofs for mathematical theorems or playing chess. There are currently no programmes that can match full human flexibility throughout wider areas or in tasks requiring a lot of common knowledge, despite ongoing improvements in computer processing speed and memory capacity [18]. On the other hand, some programmes have reached the performance levels of human experts and professionals in carrying out some specific tasks, so AI in this constrained sense is present in applications as varied as medical diagnosis, computer search engines, voice or handwriting recognition, and chatbots [12,13].

Linking SMEs with AI

The use of AI has grown over the past several years, and this is thought to have had a significant impact on society as a whole. In both large and small enterprises, AI is continuously being embraced [12]. AI may one day take the place of SMEs management. Data and algorithms are at the core of the SMEs activities. Compared to human-based techniques, solutions created with the help of AIs are more user-centric [10]. Artificial intelligence is undergoing more rapid innovation than ever. On the other hand, only few research has been able to quantify or adequately describe the essentiality of embracing AI by the SME sector. Artificial intelligence will have the capacity to carry out intuitive jobs in novel ways that combine humans and technology [6]. According to the study's findings, artificial intelligence is a crucial factor in determining SMEs success [17]. Customer knowledge management and business performance are related through the quality of innovation. Additionally, findings from the previous literature are consistent with the moderating role that customer knowledge management has in the relationship between SMEs and AI adoption [8]. Innovation, which is an important characteristic of SMEs is influenced by top manage-

ment expertise and knowledge generation practices, which in turn affect organizational performance [16]. Anecdotal and empirical evidences had established the link between AI adoption and SMEs performance. Thus, sustainable SMEs performance must be rooted in proper adoption of AI by enterprises.

Guidelines for AI Adoption by SMEs in Nigeria

AI has become a multi-purpose technology transforming production and service delivery, with the potential to significantly impact economic growth and social progress of SMEs in Nigeria. Recent research shows that AI could contribute up to $15.7 trillion to the global economy by 2030, with $3 trillion from increased productivity and $9.1 trillion from new products and services [6]. The International Finance Corporation projects that the strategic adoption of AI could add up $234 billion to Africa's GDP by 2030. Nigeria in this loop is considered to have a fast-growing technology start-up ecosystem (having attracted 25% of the $1.3 billion funding to African tech start-ups in 2021) and with proactive leadership, is well-positioned to leverage AI for economic diversification and inclusive growth. As an innovation leader on the African continent, Nigeria needs to develop a national strategy to harness the power of AI for sustainable SMEs development. But prior to the adoption of AI by SMEs in Nigeria, the following guides are important as postulated by Oluveres [11].

1.   Set goals and identify opportunities: Find high-impact use cases for AI first, where it can deliver real advantages. This could involve enhancing supply chain management, streamlining internal procedures, or enhancing customer service. To evaluate the effectiveness of your AI installation, set up specific objectives and KPIs.

2.   Data Management: Gather and store high-quality data for AI model training and support. To guarantee that AI models have the information they require to succeed, implement data management best practises such as data purification, normalisation, and storage.

3.   Create a Proof of Concept: Begin by creating a PoC for one of the use cases chosen. This will enable the evaluation AI's performance in a controlled setting and make any necessary modifications before scaling it up.

4.   Scale AI solution and incorporate it into current systems when the Proof of Concept has been effective: It can be necessary to update infrastructure, train staff on the new technology, and improve AI model as part of this process.

Recommended AI Tools for Nigerian SMEs

This tool could be divided into two main broad categories as presented by Oluveres [11].

A. First-phase tools:

•   Cloud-based AI platforms: Google Cloud AI, AWS AI Services, or Microsoft Azure AI offer accessible, cost-effective AI solutions for SMEs.

•   Data management tools: Apache Kafka, Apache Nifi, and Talend can help streamline data collection and processing.

•   Machine learning frameworks: TensorFlow, PyTorch, and scikit-learn are popular open-source tools for developing machine learning models.

B. Later-phase tools:

• AI-powered automation: Robotic Process Automation (RPA) tools like UiPath, Blue Prism, or Automation Anywhere can help automate repetitive tasks.

• Advanced analytics platforms: Tableau, Power BI, or Looker can help visualise and analyse data for better decision-making.

• Natural language processing tools: Tools like SpaCy, NLTK, or OpenAI's GPT can help unlock insights from unstructured text data.

Furthermore, Ghimire (2023) propose the following as additional issues to consider for SMEs aspiring to adopt AI in their operations.

1. Set team up for success. Define the enterprise team and goals before deciding on potential integration. Getting feedback from others in the organization is recommended; however, remember that too many voices overwhelming the discussion can hinder rather than help progress.

2. Consider company's operations. What responsibilities can shift to AI? Which of those is the most time-intensive and inefficient? Prioritize team feedback to get a hands-on perspective, and review available KPI data to identify pain points to address.

3. Weigh a cost/benefit analysis. What ROI will be needed to warrant the investment? Does expert needed? Depending on the industry and complexity, enlisting a seasoned integration specialist can be beneficial in certain situations.

4. Determine the ideal timing. Will the SMEs employees have the time to allocate to the integration process? Can the enterprise budget sustain immediate expenses to an eventual ROI? Is the company culture ideally primed for the operation?

5. Press pauses if the answer is "no" to a crucial question. Is the SMEs operations proficient and streamlined? If not, the likelihood of failing to maximize investment in AI technology increases significantly. It is important to have a stable environment to integrate new software or machine capabilities.

Ways for SMEs to Scale Up Using Artificial Intelligence

Without a question, the use of Artificial Intelligence (AI) in various industries has increased exponentially during the past two decades. AI's potential is quickly being realized in a variety of fields, including software development, marketing and content creation. The same thing happened with AI for small firms. Contrary to traditional approaches, AI-powered technology can analyze massive volumes of data and produce precise and useful insights to support decision-making across all business kinds, hence boosting corporate performance. Fatunmbi [4] propose the below as ways for SMEs in Nigeria scale up their use of AI in their operations.

1. Efficacy: AI powered solutions can automate manual repetitive tasks and analyze massive amounts of data, giving businesses more time to focus on high-level KPIs that promote corporate growth. Additionally, it improves productivity and effectiveness in day-to-day operations.

AI can help with both simple and complex issues, providing employees plenty of time to concentrate on other vital tasks. Examples include sorting incoming emails according to their content or identifying potential and unpromising contacts.

2. Fraud: In order to detect fraud in current and upcoming transactions, machine learning (ML) algorithms are trained on historical fraud tendencies. They can process data in real-time to look for CEO fraud, fraudulent invoices, payment fraud, and a variety of other fraud types. AI is a fantastic alternative because it can cope with the enormous demand and modern sophisticated fraud attempts.

3. Customer support: Numerous approaches exist for businesses to improve customer service using AI technologies. As an illustration, consider categorising support requests and rating customer satisfaction. SMEs must have insights into customer behaviour and sentiment for support and product to improve, frequently before consumers ask for it. SMEs can proactively improve this offering by utilising AI to comprehend customers' views towards it products**.**

4. Productivity: With insights into how customers engage with AI, it empowers businesses to continuously enhance their products and services. The use of AI to track what users are saying and detect the emotion behind consumer comments can help put product teams on the right path for consumer satisfaction.

5. Monitor, Evaluate, **and Iterate:** Continuously assess SMEs AI implementation's performance in relation to it set KPIs. Make the most of AI models and workflows by using this information, and discover fresh AI adoption prospects.

Tools, Tips, And Applications of AI In Small Businesses

AI-Assisted web Development

AI-assisted web development streamlines the process of ideating and creating landing pages for product marketing to the deployment of the landing pages to the internet. The best of these types of tools makes the process 10 times faster by generating content and images for the website and providing a simple-to-use drag-and-drop editor for design edits.

Content creation

AI is useful for website content creation (for landing pages), writing product descriptions, and even blog posts. AI can create natural text (long and short form) that reads like it was written by a human – ChatGPT proved it. The tools listed below are some of the cost-efficient and effective tools for content creation with AI for small businesses.

Sales

Getting a client is half the hurdle, closing the deal is the real deal. This is where personalization and appealing to a client's deepest desires come to play. With AI-assisted functionalities, specific tools create human-like interactions with generated leads from marketing to close a deal successfully and increase business revenue.

AI for small business – accounting and financial management

Bookkeeping, payrolling, invoicing, and forecasting have been done manually for decades. Financial management tools that leverage AI help small businesses see the bigger picture by focusing on the deciding factors instead of doing easily automated tasks.

Tips for using AI for small business accounting and financial management

AI for small businesses in the financial aspect can be summed up into one chunk. Tracking inventories, handling payables and receivables, cash flow reconciliation, bookkeeping, and automating other routine tasks are interconnected.

AI for small business – Human Resource Management

The importance of having an HR team cannot be overstated, even for small businesses. Onboarding new hires, interpersonal conflicts, and other issues can all be handled by the HR department as needed. These processes can be overwhelming especially for an understaffed small business, but the good news is that modern AI and machine learning techniques can enhance the HR practices and procedures of your business.

Protect sensitive HR data

Work-from-home is being embraced worldwide as an alternative mode of working. It is difficult for most small businesses to protect sensitive HR data because they don't have in-house cybersecurity teams to protect confidential data from leaking and detect anomalies within internal network requests. AI solutions help to counter these issues.

Automate recruitment processes

AI solutions like Application Tracking Systems (ATS) cross-check applicants' resumes with an advertised job description and select suitable applications for HR personnel to work with. The tools below are some of the most cost-efficient selections on the internet.

Supply chain

AI in the supply chain can be used to create digital twins, simulate scenarios, and analyse patterns. Retailers and business owners can use this to strengthen the resilience of their supply chains and make informed decisions. Practical applications of Artificial Intelligence for small businesses in the supply chain industry are on-time delivery predictions for excellent customer experience and demand predictions based on industry-wide trends.

Customer service

AI chatbots are frequently used today to have autonomous conversations with clients seeking support. Customers will most likely be unaware that they are speaking to a robot since these bots have become so clever. Also, they make it considerably simpler and less expensive to provide quick service at scale with high availability, even with a small workforce.

Conclusion

Entrepreneurs and SMEs in particular in today's corporate environment would surely benefit from learning how to apply AI in their operations. Depending on their industry, small firms can automate repetitive operations, improve customer and audience interactions, boost employee productivity, better manage and safeguard data, and much more. This article has examined the issues that AI may help Nigerian small businesses with, the various industries in which AI can be applied to small businesses, the practical AI tools available in each, and the dangers of integrating AI into your business operations. Finally, a fair cost-benefit analysis should be the basis for SMEs choice to utilise an AI tool for their operations.

References

1. Aga G, Francis D, Rodríguez-Meza J. SMEs, age, and jobs: A review of the literature, metrics, and evidence. World Bank policy research working paper. 2015; 7493.

2. Ahmed M, Khan AM, Bibi S, Zakaria M. Convergence of per capita CO2 emissions across the globe: insights via wavelet analysis. Renewable and Sustainable Energy Reviews. 2017; 75: 86-97.

3. Caballero-Morales SO. Innovation as recovery strategy for SMEs in emerging economies during the COVID-19 pandemic. Research in international business and finance. 2021; 57: 101396.

4. Frankenfield J, Scott G. Artificial Intelligence: What It Is and How It Is Used. 2023.

5. George AS, George AH. A review of ChatGPT AI's impact on several business sectors. Partners Universal International Innovation Journal. 2023; 1: 9-23.

6. Jarrahi MH. Artificial intelligence and the future of work: Human-AI symbiosis in organizational decision making. Business horizons. 2018; 61: 577-586

7. Ma L, Sun B. Machine learning and AI in marketing–Connecting computing power to human insights. International Journal of Research in Marketing. 2020; 37: 481-504.

8. Liu CHS, Dong TP. Discovering the relationship among knowledge management, sustainability marketing and service improvement: the moderating role of consumer interest. International Journal of Contemporary Hospitality Management. 2021; 33: 2799-2816.

9. Maas LT, Sadalia I, Ilham RN, Sinurat M. Opportunity Funding Model to Increase Economic Value Added MSMEs Sector at Moment of Pandemic Covid-19. In 3rd International Conference on Business and Management of Technology (ICONBMT 2021). 2021; 244-251.

10. Ng KK, Chen CH, Lee CK, Jiao JR, Yang ZX. A systematic literature review on intelligent automation: Aligning concepts from theory, practice, and future perspectives. Advanced Engineering Informatics. 2021; 47: 101246.

11. Oluveres J. AI Unleashed: A Cutting-Edge Roadmap for SMEs to Harness the Power of Artificial Intelligence. 2023.

12. Palladan AA, Abdul Kadir K, Ahmed IS, Abubakar Y. Effects of social media adoption on SME performance: the moderating role of business strategy. International Journal of Technoentrepreneurship. 2023; 4: 297-320.

13. Palladan AA, AbdulKadir K, Ahmad MA. Using principal component analysis to explore managerial factors influencing lecturers' job performance: a perspective from Nigeria. International Journal of Management in Education. 2023; 17: 374-395.

14. Pan Y, Zhang L. Roles of artificial intelligence in construction engineering and management: A critical review and future trends. Automation in Construction. 2021; 122: 103517.

15. Sequeiros JB, Chimuco FT, Samaila MG, Freire MM, Inácio PR. Attack and system modeling applied to IoT, cloud, and mobile ecosystems: Embedding security by design. ACM Computing Surveys (CSUR). 2020; 53: 1-32.

16. Singh SK, Gupta S, Busso D, Kamboj S. Top management knowledge value, knowledge sharing practices, open innovation and organizational performance. Journal of Business Research. 2021; 128: 788-798.

17. Westenberger J, Schuler K, Schlegel D. Failure of AI projects: understanding the critical factors. Procedia computer science. 2022; 196: 69-76.

18. Yang SY. Pharmacophore modeling and applications in drug discovery: challenges and recent advances. Drug discovery today. 2010; 15: 444-450.